CLOSED
RICHLAND COUNTY LANDFILL - SIDNEY
LICENSE NUMBER 102

RICHLAND AND MCCONE COUNTY HEALTH DEPARTMENT

NOVEMBER 1996 GROUNDWATER SAMPLING

JANUARY 1997

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 6

RECEIVED 1/30/1997

CLOSED
RICHLAND COUNTY LANDFILL - SIDNEY
LICENSE NUMBER 102

RICHLAND AND MCCONE COUNTY HEALTH DEPARTMENT

JULY 1996 SAMPLING

SEPTEMBER 1996

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 6

RECEIVED 9/19/1996

LAW OFFICES OF
BENNETT, MAIN & FREDERICKSON
A PROFESSIONAL CORPORATION
618 STATE STREET
BELLE FOURCHE, SOUTH DAKOTA 57717-1489
TEL (605) 892-2011
FAX (605) 892-4084

MAX MAIN
JOHN R. FREDERICKSON
KEVIN S. BAILEY

OF COUNSEL
DONN BENNETT

FAX TRANSMITTAL SHEET

DATE: June 26, 1996
TIME: 9:44
TO: Ed Thamke (406) 444-1499
FROM: Kevin S. Bailey
RE: OUR FILE NO.

NUMBER OF PAGES TRANSMITTED (INCLUDING TRANSMITTAL SHEET): 3

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE CALL **(605) 892-2011** IMMEDIATELY.
TELECOPY OPERATOR: connie

MESSAGE:

Kevin Bailey is the son & Lauridsens who live Crichland Co. Class II #102 down gradient from this landfill. He was concerned because Kelly Logan, R.S. Richland Co, told his folks they had gas in their well. I could not find any evidence of gas in the attached analytical. I told him that the report did not indicate chemical parameters toxic to his folks, but that we are keeping an eye on the down gradient landfill wells. I also advised him to contact Pat Potts in the future for these questions. Ed. T.

CONFIDENTIALITY NOTE: THE INFORMATION CONTAINED IN THIS FACSIMILE MESSAGE IS LEGALLY PRIVILEGED AND CONFIDENTIAL INFORMATION INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY NAMED ABOVE. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY USE, DISSEMINATION, DISTRIBUTION OR COPY OF THIS TELECOPY IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS TELECOPY IN ERROR, PLEASE IMMEDIATELY NOTIFY US BY TELEPHONE AND RETURN THE ORIGINAL MESSAGE TO US AT THE ADDRESS ABOVE VIA THE UNITED STATES POSTAL SERVICE. THANK YOU.

Client Name: MAXIM - BILLINGS, MT
Project No.: 87-910
Laboratory No.: 170548
Sample Name: LAURIDSEN
Sample Date: 12/20/95
Collected by: M. HABECK
Time Sampled: 1730
Sample Type: WATER

PARAMETER	MEASURED VALUE		METHOD NUMBER	DATE ANALYZED
MONTANA LANDFILL INORGANICS				
Beryllium as Be (Dissolved)	<0.002	mg/l	7091	01/08/96
Copper as Cu (Dissolved)	0.004	mg/l	7211	01/09/96
Iron as Fe (Dissolved)	0.56	mg/l	6010	01/03/96
Lead as Pb (Dissolved)	<0.002	mg/l	7421	01/03/96
Nickel as Ni (Dissolved)	<0.02	mg/l	6010	01/03/96
Vanadium as V (Dissolved)	<0.05	mg/l	6010	01/03/96
Chloride as Cl	8	mg/l	9252A	01/04/96
Sulfate as SO4	457	mg/l	375.2	01/09/96
Chemical Oxygen Demand	<5	mg/l	410.2	01/09/96
Electrical Conductivity	2210	umhos/cm	9050	01/05/96
pH	8.8	S.U.	9040	12/22/95
Antimony as Sb (Dissolved)	<0.002	mg/l	7041	12/26/95
Barium as Ba (Dissolved)	<0.02	mg/l	6010	01/03/96
Zinc as Zn (Dissolved)	<0.02 (1)	mg/l	6010	01/03/96
Nitrate + Nitrite as N	<0.05	mg/l	353.2	01/11/96
MONTANA LANDFILL ORGANICS				
Data File Number-Volatiles	1228951019			
Benzene	<1	ug/l	8260	12/28/95
Bromochloromethane	<1	ug/l	8260	12/28/95
Bromodichloromethane	<1	ug/l	8260	12/28/95
Bromoform	<1	ug/l	8260	12/28/95
Bromomethane	<2	ug/l	8260	12/28/95
Carbon Tetrachloride	<1	ug/l	8260	12/28/95
Chlorobenzene	<1	ug/l	8260	12/28/95
Chloroethane	<1	ug/l	8260	12/28/95
Chloroform	<1	ug/l	8260	12/28/95
Chloromethane (Methyl chloride)	<1	ug/l	8260	12/28/95
Dibromochloromethane	<1	ug/l	8260	12/28/95
1,2-Dibromo-3-chloropropane	<5	ug/l	8260	12/28/95
1,2-Dibromoethane	<1	ug/l	8260	12/28/95
Dichlorodifluoromethane	<1	ug/l	8260	12/28/95
Dibromomethane	<1	ug/l	8260	12/28/95
1,2-Dichlorobenzene	<1	ug/l	8260	12/28/95
1,4-Dichlorobenzene	<1	ug/l	8260	12/28/95
1,1-Dichloroethane	<1	ug/l	8260	12/28/95
1,2-Dichloroethane	<1	ug/l	8260	12/28/95
1,1-Dichloroethene	<1	ug/l	8260	12/28/95

Kellie Hayden
406-482-2267

Client Name: MAXIM - BILLINGS, MT
Project No.: 87-910
Laboratory No.: 170548
Sample Name: LAURIDSEN
Sample Date: 12/20/95
Collected by: M. HABECK
Time Sampled: 1730
Sample Type: WATER

PARAMETER	MEASURED VALUE		METHOD NUMBER	DATE ANALYZED
c-1,2-Dichloroethene	<1	ug/l	8260	12/28/95
t-1,2-Dichloroethene	<1	ug/l	8260	12/28/95
1,2-Dichloropropane	<1	ug/l	8260	12/28/95
c-1,3-Dichloropropene	<1	ug/l	8260	12/28/95
t-1,3-Dichloropropene	<1	ug/l	8260	12/28/95
Ethylbenzene	<1	ug/l	8260	12/28/95
Methylene chloride	<5	ug/l	8260	12/28/95
Styrene	<1	ug/l	8260	12/28/95
1,1,1,2-Tetrachloroethane	<1	ug/l	8260	12/28/95
1,1,2,2-Tetrachloroethane	<1	ug/l	8260	12/28/95
Tetrachloroethene	<1	ug/l	8260	12/28/95
Toluene	<1	ug/l	8260	12/28/95
1,1,1-Trichloroethane	<1	ug/l	8260	12/28/95
1,1,2-Trichloroethane	<1	ug/l	8260	12/28/95
Trichloroethene	<1	ug/l	8260	12/28/95
Trichlorofluoromethane	<1	ug/l	8260	12/28/95
1,2,3-Trichloropropane	<1	ug/l	8260	12/28/95
Vinyl Chloride	<1	ug/l	8260	12/28/95
Total Xylenes	<1	ug/l	8260	12/28/95
Acrylonitrile	<20	ug/l	8260	12/28/95
Carbon disulfide	<20	ug/l	8260	12/28/95
Iodomethane (Methyl Iodide)	<10	ug/l	8260	12/28/95
t-1,4-Dichloro-2-butene	<5	ug/l	8260	12/28/95
Vinyl acetate	<10	ug/l	8260	12/28/95
Acetone	<20	ug/l	8260	12/28/95
Methyl Ethyl Ketone (2-Butanone)	<20	ug/l	8260	12/28/95
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	<10	ug/l	8260	12/28/95
2-Hexanone (Methyl Butyl Ketone)	<10	ug/l	8260	12/28/95
1,2-Dichloroethane-d4 (Surrogate)	92	%	8260	12/28/95
Toluene-d8 (Surrogate)	100	%	8260	12/28/95
4-Bromofluorobenzene (Surrogate)	100	%	8260	12/28/95

File: Richland Co
old Sidney Ldfl (inactive)
grd wtr (corresp.)

RECEIVED
JUN 26 1996
Montana Department of
Environmental Quality
Waste Management Division

DISTRICT SANITARIAN
RICHLAND AND McCONE COUNTY HEALTH DEPARTMENTS

221 5th St. S.W. Sidney, MT 59270 Phone: 406 482-2207

MEMORANDUM

TO: Pat Potts

FROM: Kelly Logan, R.S. KL

DATE: June 24, 1996

SUBJECT: June 13, 1996 letter.

Thank you for the prompt review of our "December 1995 Groundwater Monitoring Report". The following should address your questions:

1) Two monitoring wells were labeled SL-3. The well closet to SL-5 is SL-4. It has been corrected in our copy.

2) Lauridsen well is well # 8-4 in our 1990 report. A copy of the well log is enclosed.

3) Well 8-0 will be sampled during our next sampling period. We will plug the well only after receiving permission from UST Program and Solid Waste Program.

4) Spring S-3 will be sampled during our regular sampling run.

5) The Solid Waste Board is presently reviewing the CMS and will be submitting comments to the consultant in July/August. I will need that much time to adequately review the report.

If you have any questions please call or write.

File: Richland C
old Sidney LUST (Gasb
gas.wtr - (Closed)

DISTRICT SANITARIAN
RICHLAND AND MCCONE COUNTY HEALTH DEPARTMENTS

221 5th St. S.W. Sidney, MT 59270 Phone: 406 482-2207

MEMORANDUM

TO: Pat Potts

FROM: Kelly Logan, R.S.

DATE: June 24, 1996

SUBJECT: June 13, 1996 letter.

Thank you for the prompt review of our "December 1995 Groundwater Monitoring Report". The following should address your questions:

1) Two monitoring wells were labeled SL-3. The well closest to SL-2 is SL-3. It has been corrected in our copy.

2) Laundgren well is well # R-4 in our 1990 report. A copy of the well log is enclosed.

3) Well S-8 will be sampled during our next sampling period. We will plug the well only after receiving permission from UST Program and Solid Waste Program.

4) Spring S-3 will be sampled during our regular sampling run.

5) The Solid Waste Board is presently reviewing the CMS and will be submitting comments to the consultant in July/August. I will need that much time to adequately review the report.

If you have any questions please call or write.

ADMINISTRATOR OF GROUNDWATER CODE
MONTANA WATER RESOURCES BOARD

NOTICE OF COMPLETION OF GROUNDWATER APPROPRIATION BY MEANS OF WELL

Developed after January 1, 1962

(Under Chapter 237 Montana Session Laws, 1961, as amended)

This form to be prepared by driller, and three copies to be filed by the **owner** with the County Clerk and Recorder in the county in which the well is located, last copy to be retained by driller.

Please answer all questions. If not applicable, so state, otherwise the form may be returned.

Owner Vance Anderson

Address Sidney, Montana

Date well started 29 June 1972

completed 3 July 1972

For Administrator's Use
File 523562
10:30:72 Q
GW 1 11:00 P.M.

Type of well Drilled
(Dug, driven, bored or drilled)

Equipment used churn drill
(Churn drill, rotary or other)

Water Use: Domestic XX ☐ Municipal ☐ Stock ☐ Irrigation ☐

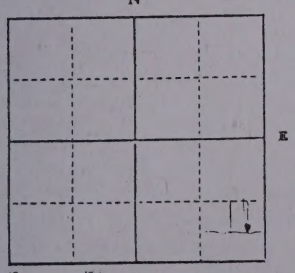
Industrial ☐ Drainage ☐ Other ☐* Garden/Lawn ☐

*Describe

USE: If used for irrigation, industrial, drainage or other. Explain, state number of acres and location or other data (i.e. Lot, Block and Addition).

ESTIMATED ANNUAL WITHDRAWAL 500,000 gal'n

Size of Drilled Hole	Size and Weight of Casing	From (Feet)	To (Feet)	PERFORATIONS Kind Size	From (Feet)	To (Feet)
8"	6" id 18.79#	0	68	None		
6"	4"-1.d 10.89#	0	269	None		



SE SE SW Sec. 8
T 23 N/S R 59 E/W

Static water level 250 ft.*
Pumping water level 270 ft.*
at 4 gallons per minute,
measured 30 minutes after pumping began.
*Measured from ground level.
Well developed by bailor
for ½ hours.
Power Pump HP
Remarks: (Gravel packing, cementing, packers, type of shutoff)

Montana Bureau of Mines and Geology

Indicate the character, color, thickness of strata such as soil, clay, sand, gravel, shale, sandstone, etc. Show depth at which water is found and height to which water rises in well.

8-4

Top of Ground (Elev. above sea level)

From (Feet)	To (Feet)	
0		
0	67	gravel sand
67	102	grey shale
102	111	grey shale coal
111	122	grey shale
122	123	coal
123	205	grey sandy shale
205	210	coal
210	226	grey sandy shale
226	235	grey shale
235	250	grey sandy shale
250	256	grey shale
256	270	grey sandy shale
270	275	sandstone water
275	284	coal

CLOSED
RICHLAND COUNTY LANDFILL - SIDNEY
LICENSE NUMBER 102

MAXIM

DECEMBER 1995 GROUNDWATER MONITORING REPORT

MARCH 1996

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 6

RECEIVED 6/10/1996

File: Richland Co
old Sidney
grd wtr (corr)

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY DIVISION

MARC RACICOT, GOVERNOR

COGSWELL BUILDING
1400 BROADWAY

STATE OF MONTANA

(406) 444-2406
FAX (406) 444-1374

PO BOX 200901
HELENA MONTANA 59620-0901

MEMORANDUM

RECEIVED
APR 01 1996
Montana Department of Environmental Quality
Waste Management Division

TO: Pat Potts, WMD
FROM: John Arrigo, WQD
DATE: March 29, 1996
SUBJECT: Old Sidney Landfill

I am sorry it has taken so long to respond to your memo. You asked two basic questions, (1) Is the water-bearing formation considered a aquifer according to water quality criteria, and (2) Are corrective measures warranted at the site.

The Water Quality Act (WQA) and the Public Water Supply Law and their corresponding regulations do not contain a definition for aquifer or contain regulatory criteria that can be used to determine if a formation is an aquifer. Under the Montana Agricultural Chemical Ground Water Protection Act "aquifer" means a water-bearing, subsurface formation capable of yielding sufficient quantities of water to a well for a beneficial use [80-15-102(2), MCA].

The 5 to 6-foot diameter, hand dug well yields water for a domestic supply so it appears that the formation penetrated by that well would be considered an aquifer. Obviously well construction is an important factor in determining well yield. No information is provided on the yield of this well over a period of time. Realistically, a large diameter well in a low yield formation may be more of a collection sump than a supply well. Monitoring wells near the landfill produce adequate water for monitoring purposes. However under the Montana water use regulations, water testing or monitoring is not a beneficial use of water requiring the filing of a permit (water right) application [ARM 36.12.106].

Compared to Montana's productive alluvial aquifers, the low yield formations beneath the landfill would be considered aquitards. In some parts of Montana these low yield formations provide the only source of drinking water for rural residents. In these cases these low yield formations clearly serve as aquifers. At the old Sidney landfill if you have monitoring wells that produce up to 0.28 gpm and a spring discharging from the same formation at 15 gpm, I would conclude the formation is a low yield aquifer.

For the purpose of determining if corrective action is warranted, the aquifer question is moot. Public policy under the WQA is to protect, maintain and improve the quality of state water. The WQA definition of "state water" means a body of water, irrigation system, or drainage system, either surface or underground [75-5-103(25), MCA]. "Ground water" under the Montana Ground Water Pollution Control System Regulations means water occupying the voids within a geologic stratum and within the zone of saturation [ARM 16.20.1001(5)]. The ground water beneath the landfill is state water subject to protection under the WQA.

Operation of the landfill must comply the WQA and corresponding regulations. If the human health standards listed in WQB-7 are exceeded in the ground water for any parameter a violation of the WQA has occurred, and corrective action is warranted. The department may authorize water quality standards to be exceeded in either a mixing zone or in an authorization to degrade. The old Sidney landfill has neither a permitted mixing zone or an authorization to degrade. If you need assistance to determine WQA compliance issues, please feel free to contact me.

File: Richland Co
old Sidney
grd wtr (corr)

MAXIM
TECHNOLOGIES INC

Consulting Engineers & Environmental Scientists
600 South 25th Street
P O Box 30615
Billings, MT 59107

Telephone: (406) 248-9161
Fax: (406) 248-9282

March 8, 1996

RECEIVED
MAR 1 1 1996
Montana Department of
Environmental Quality
Waste Management Division

Waste Management Division
Montana Department of Environmental Quality
2209 Phoenix Avenue
P.O. Box 200901
Helena, Montana 59620-0901

ATTENTION: Ms. Pat Potts

SUBJECT: Notification that Enforcement Standards Have Been Exceeded
Winter, 1995 Monitoring Event
Richland County Solid Waste District Landfill
Sidney, Montana
Maxim Project No. 550950456.05 (90-3092)

Dear Ms. Potts:

This letter is submitted on behalf of the Richland County Commissioners to provide notification that enforcement standards were exceeded based on laboratory analytical results from groundwater samples collected at the Old Richland County Landfill.

Our field staff collected the groundwater samples on December 20 and 21, 1995. Sampling methods and procedures for both dates were conducted in accordance with the approved project Sampling and Analysis Plan (SAP). Summaries of the parameter concentrations exceeding groundwater protection standards are provided in Table 1.

Analytical parameters identified as exceeding enforcement standards include:

- Volatiles: Methylene Chloride (Well SL-3) and Tetrachloroethene (Wells SL-2 and SL-4).
- Inorganics: Nitrate-Nitrite as Nitrogen (Well SL-1 and SL-4), Barium (SL-1 and SL-3), and Iron (Lauridsen).

These parameters exceeded maximum contaminant levels (MCLs) for drinking water as promulgated in Title 40 Code of Federal Regulations, Part 141, as adopted by the State of Montana under the Montana groundwater quality standards. Despite the exceedences, groundwater concentrations generally have remained static over the past 3½ years.

The Lauridsen well is an off site private well located approximately 1,000 feet east of the landfill. The observed iron concentration is likely biased by iron well casing (well log; Chen-Northern, 1991), and iron piping (field observation).

Please note that because we have not completed the data validation process for the December, 1995 sample set as required by the project SAP, the attached data should be considered preliminary. Our upcoming data summary report will contain a description of the data validation procedure and present validated data.

If you have questions, please call us.

Sincerely,

Maxim Technologies, Inc.

Brian McHugh
Billings Group Manager

John L. Olson
Hydrogeologist

BMc(JLO)rmr

cc: Warren Johnson, Richland County, w/Attachments

n\typing\envir\903092\rclf396.ltr

Table 1
Summary of Parameters Exceeding Groundwater Protection Standards
Richland County Landfill, Sidney, Montana
December, 1995

Parameter	Units	Groundwater Protection Standard	Location				
			SL-1	SL-2	SL-3	SL-4	Lauridsen
Methylene Chloride	ug/l *1	5 *3	<5	<1	**13**	<5	<5
Tetrachlorethene	ug/l	5 *3	<1	**7**	3	**30**	<1
Barium	mg/l *2	1 *4	**1.23**	0.70	**1.89**	0.12	<0.02
Nitrate+Nitrite	mg/l	10 *3	**35**	3.02	5.3	**12**	<0.05
Iron	mg/l	0.53 *4	<0.05	<0.05	<0.05	<0.05	**0.56** *4

EXPLANATION

*1 Micrograms per liter (ug/l).
*2 Milligrams per liter (mg/l).
*2 Maximum Contaminant Level based on United States Environmental Protection Agency Primary Drinking Water. Standards. **Concentrations higher than the MCL are highlighted in bold text.**
*3 Human Health Standards based on Montana Department of Environmental Quality Numeric Water Quality Standards, Circular WQB-7.
*4 The iron concentration is likely biased by well construction and plumbing.

FILE: Richland Co
old Sidney
grd wtr (cont)

MAXIM
TECHNOLOGIES INC

Consulting Engineers & Environmental Scientists
600 South 25th Street
P O Box 30615
Billings, MT 59107

Telephone: (406) 248-9161
Fax: (406) 248-9282

February 29, 1996

Waste Management Division
Montana Department of Environmental Quality
2209 Phoenix Avenue
P.O. Box 200901
Helena, Montana 59620-0901

RECEIVED
MAR 0 1 1996
Montana Department of
Environmental Quality
Waste Management Division

ATTENTION: Ms. Pat Potts

SUBJECT: Notification that Enforcement Standards Have Been Exceeded
Winter, 1995 Monitoring Event
Richland County Solid Waste District Landfill
Sidney, Montana
Maxim Project No. 550950456.05

Dear Ms. Potts:

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If you have questions, please call us.

Sincerely,

Maxim Technologies, Inc.

DRAFT

Brian McHugh
Billings Group Manager

DRAFT

John L. Olson
Hydrogeologist

BMc(JLO)dg

cc: Warren Johnson, Richland County, w/Attachments

n\typing\envir\903092\rclf296.ltr

Table 1
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Richland County Landfill, Sidney, Montana
December, 1995

Parameter	Units	Groundwater Protection Standard	Location				
			SL-1	SL-2	SL-3	SL-4	Lauridsen
Methylene Chloride	ug/l *1	5 *3	<5	<1	**13**	<5	<5
Tetrachlorethene	ug/l	5 *3	<1	**7**	3	**30**	<1
Barium	mg/l *2	1 *4	**1.23**	0.70	**1.89**	0.12	<0.02
Nitrate+Nitrite	mg/l	10 *3	**35**	3.02	5.3	**12**	<0.05
Iron	mg/l	0.53 *4	<0.05	<0.05	<0.05	<0.05	**0.56** *4

EXPLANATION

*1 Micrograms per liter (ug/l).

*2 Milligrams per liter (mg/l).

*2 Maximum Contaminant Level based on United States Environmental Protection Agency Primary Drinking Water. Standards. **Concentrations higher than the MCL are highlighted in bold text.**

*3 Human Health Standards based on Montana Department of Environmental Quality Numeric Water Quality Standards, Circular WQB-7.

*4 The iron concentration is likely biased by well construction and plumbing.

ATTN: T
Richland
G.W Mo

County Richland
Facility & # Richland # 102
Closure / Landfarm
Finan Assur / Liner
GW Corr Meas / Methane
GW Monitoring (Comm) / O & M
GW Reports / Run - On
Inspections
Other:

4-1
Environmental Quality
Waste Management Division

DISTRICT SANITARIAN
RICHLAND AND McCONE COUNTY HEALTH DEPARTMENTS

Kelly Logan
221 5th St. S.W.
Sidney, MT 59270

Phone: 482-2207

January 9, 1996

Mr. :

Sidney, MT 59270

RE: Status of Groundwater Monitoring Program at the Old Richland County Landfill

Dear Mr. :

The Montana Department of Environmental Quality adopted new regulations for groundwater monitoring at municipal solid waste landfills on September 25, 1993. These new rules provide uniform standards for groundwater monitoring and corrective action at all Class II landfills in Montana. In compliance with the new rules, the Richland County Solid Waste Board was required to conduct assessment-level groundwater monitoring at the old Richland County Landfill beginning in the spring of 1994. Additional assessment-level groundwater monitoring events were completed at the landfill during the fall of 1994 and the summer of 1995.

Analytical results of water samples collected at the landfill indicate that several volatile organic compounds (VOCs) are present in the uppermost groundwater system beneath the landfill. As of August, 1995 a total of three VOCs (benzene, tetrachloroethene, and dichloromethane) have been measured in at least one monitoring well at the landfill on at least one occasion at concentrations equal to or exceeding drinking water standards. VOCs have also been detected in off-site monitoring well SL-4 (see attached map). All monitoring wells at the landfill are completed in a perched water table composed of sand and gravel that overlies bedrock of the Fort Union Formation. Most residential wells are completed in the Fort Union Formation and VOCs have not been detected in any samples collected from residential wells. We have sampled several residential wells near the landfill this winter in order to confirm the absence of VOCs in the deeper water bearing units of the Fort Union Formation.

In accordance with the Administrative Rules of Montana, Title 16, Chapter 14, Subchapter 7, Section 8 (ARM 16.14.708), the Richland County Solid Waste Board is, "required to notify all persons who own land or reside on land that directly overlies any part of the plume of contamination if contaminants have migrated off-site, if indicated by sampling of wells." Therefore, because several VOCs have been detected in off-site well SL-4 and in well SL-2 (located along the eastern boundary of the landfill), the Richland County Solid Waste Board hereby notifies you and adjacent landowners of the current status of our groundwater monitoring program.

In compliance with the Administrative Rules of Montana, the Richland County Solid Waste Board is also required to initiate a corrective measures assessment for the landfill. The corrective measures assessment involves evaluating various options to mitigate VOCs in groundwater downgradient from the landfill. The preferred remedy, selected as a result of completing this assessment, will then be presented at a public meeting. Upon approval of the remedy by the Montana Department of Environmental Quality, the final remedy will be implemented.

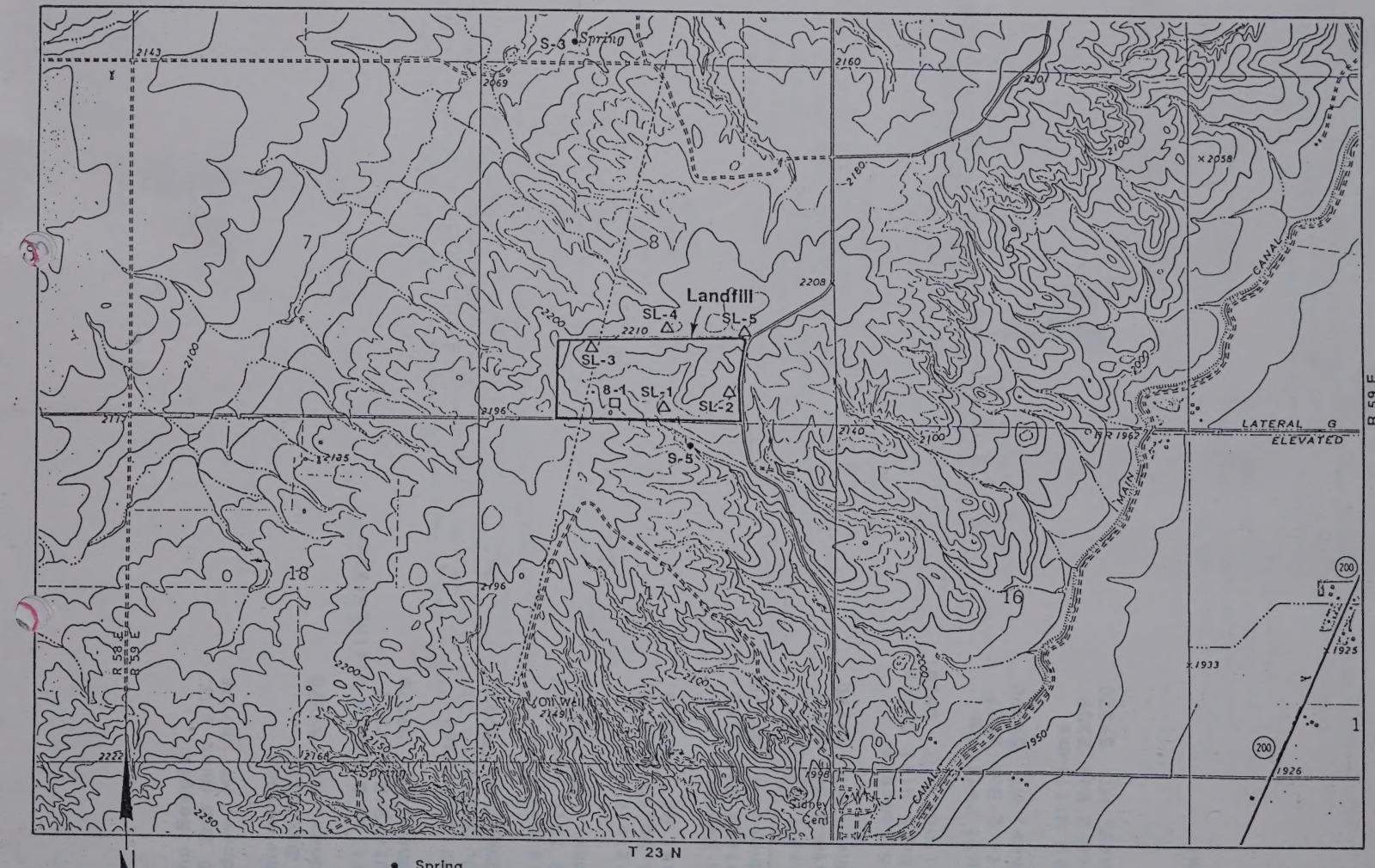
Please feel free to contact me if you have any questions regarding this matter.

Sincerely,

Kelly Logan, R.S.

attachment

xc w/o attachment: Pat Crowley/MDEQ



Monitoring Stations
Richland County Solid Waste District Landfill
Sidney, Montana

HE&E 90-3092

John Beagle
120 2nd Ave. S.W.
Sidney, MT 59270

John Almond
HC Box 5119
Sidney, MT 59270

William & David Steinbeisser
Route 2 Box 2372
Sidney, MT 59270

Ruby Lauridsen
P.O. Box 491
Sidney, MT 59270

Lyle Peterson
113 10th Ave. S.W.
Sidney, MT 59270

Myrtle Franz
146 South 80th 51
Mesa, AZ 85208

Jim Sanders
Route 2 Box 2352
Sidney, MT 59270

Cliff Lamphier
Route 2 Box 2355
Sidney, MT 59270

Milo Lamphier
34 Rock Hill Drive
Billings, MT 59101

Kermit Peterson
Route 2 Box 2527
Sidney, MT 59270

Terry Williams
Route 2 Box 2359
Sidney, MT 59270

sw.ml

John Beagle
120 2nd Ave. S.W.
Sidney, MT 59270

John Almond
HC Box 3119
Sidney, MT 59270

William & David Steinbeisser
Route 2 Box 2372
Sidney, MT 59270

Ruby Leonidean
P.O. Box 491
Sidney, MT 59270

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113 10th Ave. S.W.
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Route 2 Box 2355
Sidney, MT 59270

Milo Lamphier
34 Rock Hill Drive
Billings, MT 59101

Kermit Peterson
Route 2 Box 2327
Sidney, MT 59270

Terry Williams
Route 2 Box 2359
Sidney, MT 59270

sw.mj

File: Richland Co old Sidney Ld fill grd wtr (corr)

MAXIM
TECHNOLOGIES INC

1610 B Street
P.O. Box 4699
Helena, Montana 59604

(406)443-5210
Fax: (406)449-3729

RECEIVED
DEC 11 1995
Montana Department of Environmental Quality
Waste Management Division

December 8, 1995

Mr. Pat Crowley
Montana Department of Environmental Quality
Waste Management Division
P.O. Box 200901
Helena, Montana 59620

RE: Fall, 1995 Groundwater Monitoring Event - Richland County Sanitary Landfill

Dear Mr. Crowley:

The Richland County Solid Waste Board requested that we complete the Fall, 1995 groundwater monitoring event at the former Richland County Landfill during December, 1995. On behalf of the Richland County Solid Waste Board, and in accordance with discussions we had during our meeting last week, we are requesting approval from the Montana Department of Environmental Quality to delete the following parameters from the normally required analytical parameter list for this monitoring event:

- cyanide
- beryllium (May 94 0.015 SL-3)
- chromium
- copper
- lead (bkgrd S-5 6/93)
- nickel
- silver
- vanadium
- arsenic (barium antimony)
- cadmium
- cobalt
- iron
- mercury
- selenium
- thallium

Based on our review of the water quality data base for the former Richland County Landfill, the parameters listed above have either never been detected in water samples collected at the landfill or they have occasionally been detected at concentrations near the practical quantitation limits. We understand that approval of this request does not mean that the aforementioned parameters will not be included in future groundwater monitoring episodes completed at the site. Instead, with your approval, we would like to include these parameters in monitoring events once per year or once every other year.

We propose to collect water samples from monitoring wells SL-1, SL-2, SL-3, SL-4, and SL-5, the Lamphier well, springs S-3 and S-5, and stock/domestic wells 8-1 and 8-2. We believe additional water quality data obtained from spring S-3, the Lamphier well, and wells 8-1 and 8-2 will be useful during the preparation of the Corrective Measures Assessment for the landfill. Please contact the Richland County Solid Waste Board as soon as possible with your decision regarding our request as we would like to complete the monitoring event before Christmas.

Sincerely,

Patrick Dunlavy
Senior Hydrogeologist

xc: Richland County Solid Waste Board
Barry Damschen/Damschen and Associates
Kelly Logan/Richland County Sanitarian
John Olson/Maxim/Billings

Asteco • Austin Research Engineers • Chen-Northern • Empire Soils Investigations • Huntingdon • Kansas City Testing
Maxim Engineers • Nebraska Testing • Patzig Testing • Southwestern Laboratories • Thomas-Hartig • Twin City Testing

CLOSED
RICHLAND COUNTY LANDFILL - SIDNEY
LICENSE NUMBER 102

MAXIM

SUMMER 1995 GROUNDWATER MONITORING REPORT

OCTOBER 1995

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 6

RECEIVED 11/7/1995

File: Richland Co
Sidney (old) II
gw & wtr (corr)

MAXIM
TECHNOLOGIES INC

Consulting Engineers & Environmental Scientists
600 South 25th Street
P O Box 30615
Billings, MT 59107

Telephone: (406) 248-9161
Fax: (406) 248-9282

RECEIVED
AUG 29 1995
Montana Department of
Environmental Quality
Waste Management Division

August 28, 1995

Waste Management Division
Montana Department of Environmental Quality
2209 Phoenix Avenue
P.O. Box 200901
Helena, Montana 59620-0901

ATTENTION: Ms. Pat Potts

SUBJECT: Notification that Enforcement Standards Have Been Exceeded
Summer, 1995 Monitoring Event
Richland County Solid Waste District Landfill
Sidney, Montana
Maxim Project No. 90-3092

Dear Ms. Potts:

This letter is submitted on behalf of the Richland County Commissioners and Damschen and Associates, Inc., to provide notification that enforcement standards were exceeded based on laboratory analytical results from groundwater samples collected at the Old Richland County Landfill.

Our field staff collected the groundwater samples on June 21, 1995. Due to laboratory error, samples for volatile organic compound (VOC) analyses were recollected on August 1, 1995. Sampling methods and procedures for both dates were conducted in accordance with the approved project Sampling and Analysis Plan (SAP). Summaries of the identified organic and inorganic compounds are provided in Tables 1 and 2 respectively.

Analytical parameters identified as exceeding enforcement standards include:

- Volatiles: Methylene Chloride (Well SL-3) and Tetrachloroethane (Wells SL-2 and SL-4)
- Inorganics: Barium (Well SL-3) and Nitrate-Nitrite as Nitrogen (Well SL-1)

These parameters exceeded maximum contaminant levels (MCLs) for drinking water as promulgated in Title 40 Code of Federal Regulations, Part 141, as adopted by the State of Montana under the Montana groundwater quality standards. Despite the exceedences, groundwater concentrations generally appear to have remained static or improved slightly.

Please note that because we have not completed the data validation process for the June and August, 1995 sample set as required by the project SAP, the attached data should be considered preliminary. Our forthcoming data summary report will contain a description of the data validation procedure and present validated data.

If you have questions, please call us.

Sincerely,

MAXIM TECHNOLOGIES, INC.

Brian McHugh
Billings ECS Manager

John L. Olson
Project Hydrogeologist

BMc(JLO)dg

cc: w/ Att

Mr. Barry Damschen
Damschen and Associates, Inc.
P.O. Box 4817
Helena, Montana 59604

Richland County Commissioners
Richland County Courthouse
Sidney, Montana 59270

n\typing\envir\903092\gwe695.fnl

TABLE 1

SUMMARY OF VOLATILE ORGANIC WATER QUALITY DATA
RICHLAND COUNTY SANITARY LANDFILL
SIDNEY, MONTANA

All Concentrations in ug/l

Location	Date	BENZENE	CHLOROFORM	1,4 – DICHLO-BENZENE	DICHLORO-DIFLUOROMETHANE	1,1 – DICHLORO-ETHANE	CIS – 1,2 – DICHLORO-ETHENE	1,2 – DICHLORO-PROPANE	ETHYLBENZENE	METHYLENE CHLORIDE	TETRACHLORO-ETHENE	TOLUENE	1,1,2–TRICHLORO-ETHENE	1,1,1 – TRICHLORO-ETHANE	TRICHLORO-FLUOROMETHANE	XYLENES
	MCL's	5	*	600	*	*	70	5	700	5	5	1000	5	200	*	10,000
	WQB–7	1.2	5.7	600	*	*	70	0.52	700	0.52	0.8	1000	2.7	200	10,000	10,000
S–5	Aug 92												1			
	Feb 93															
	June 93															
	Jan 94															
	May 94															
	Oct 94															
	June 95															
SL–1	Aug 92			1												
	Feb 93						9									
	June 93	11		8			31		5			1				1
	Jan 94			2	1		2									
	May 94															
	Oct 94															
	June 95						1									
SL–2	Aug 92				4						27				1	
	Feb 93										19			2		
	June 93				3						10					
	Jan 94		2		1						10			2		
	May 94		1								11			1		
	Oct 94		1		1						7			1		
	June 95		2		1						7			1		
SL–3	Aug 92		2							7						
	Feb 93		3		8	1				15						
	June 93		5		13					32						
	Jan 94		5		4	4				31						
	May 94		3			3				15						
	Oct 94		2		2	2				8						
	June 95		2		2	2				14	2			2		
SL–4	Oct 94		2		1	1	3				13			1	2	
	June 95		2		2	2	5	4			26		2	2		
SL–5	Nov 94											2**				
	June 95															

Notes:

All Units in Micrograms per Liter (ug/l)

MCL – Maximum Contaminant Level Based on the US EPA Primary Drinking Water Standards

WQB–7 = Human Health Standards from Montana's Numeric Water Quality Standards (Circular WQB–7)

Shading Indicates at or Above MCL

Blank Indicates Parameter Less Than Practical Quantitation Limit

* No Maximum Contaminant Level or Human Health Standard

** Resample on November 3, 1994, was below detection li,it

TABLE 2

SUMMARY OF INORGANIC WATER QUALITY DATA
RICHLAND COUNTY SANITARY LANDFILL
SIDNEY, MONTANA

All concentrations in mg/l

Location	Parameter / Date	AMMONIA as N	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CHROMIUM	COBALT	COPPER	IRON as Fe	LEAD	MANGANESE	NICKEL	+NITRITE as N	SELENIUM	ZINC
	MCLs	*	0.006	0.05	2.0	0.004	0.005	0.1	*	*	*	0.05	*	0.1	10	0.05	*
	WQB–7	*	0.014	0.000018	1.0	0.009	0.005	0.1	*	1	0.3	0.015	0.05		10	0.05	5
S–5	Feb 93				0.300										.73		
	June 93				0.350							0.003			.20		0.050
	Jan 94	NS			0.300										1.47		
	May 94	NS	0.010		0.3					0.002					0.82		
	Oct 94	NS	0.005j		0.29					0.007j					0.47		
	June 95	NS			0.34										0.68		
SL–1	Feb 93	0.89			3.300						0.560		3.250	0.020	1.24		
	June 93	1.45			5.900				0.008				9.190	0.050	.60		0.050
	Jan 94	NS			1.600					0.001				0.020	10.6		
	May 94	NS	0.003		0.3		0.0012			0.005	0.11				4.7		
	Oct 94	NS	0.008j		0.76					0.011j					47		0.02
	June 95	NS			1.05									0.02	14.6		0.05
SL–2	Feb 93				0.900										9.00		
	June 93				0.920										6.60		
	Jan 94	NS			0.800										7.7		
	May 94	NS	0.008		0.8	0.012				0.003					5.8		
	Oct 94	NS	0.003j		0.74					0.001j					4.6		
	June 95	NS			0.90										6.6		0.04
SL–3	Feb 93				2.400								0.090		9.20	0.005	
	June 93				2.450								0.080		8.40		
	Jan 94	NS			2.300										8.0		
	May 94	NS	0.008		2.2	0.015				0.002					6.8		
	Oct 94	NS	0.005j		1.94					0.009j			– –		6.4		
	June 95	NS			2.32										5.27		0.04
SL–4	Oct 94	NS	0.005j		0.28					0.003j					12		
	June 95	NS			0.21					0.002					5.09		0.05
SL–5	Nov 94	NS			0.2					0.009j	0.4				0.92		
	June 95	NS			0.37					0.002					0.63		0.03

NOTES:

All Units in Milligrams per Liter

MCL = USEPA Maximum Contaminant Levels for Drinking Water

WQB–7 = Human Health Standards from Montana's Numeric Water Quality Standards (Circular WQB–7)

Shading Indicates At or Above MCL

Blank Indicates Parameter Less Than Practical Quantitation Limit

* No Maximum Contaminant Level or Human Health Standard

j = Estimated Concentration based on RPD outside control limit

ATTN: PAT CROWLEY

PAT POTTS

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APR 17 1995

Montana Department of Health
and Environmental Sciences
Waste Management Division

File:
Richland Co. L.F. (old)
GW File.

DISTRICT SANITARIAN
RICHLAND AND McCONE COUNTY HEALTH DEPARTMENTS

Kelly Logan
221 5th St. S.W.
Sidney, MT 59270

Phone: 482-2207

April 14, 1995

Milo Lamphier
35 Rockhill Drive
Billings, MT 59101
Phone: 252-9848

Dear Milo,

Enclosed is Huntingdon's summary of our last sampling run at our landfill in October 1994. The summary reports that it is possible that there is a northeast-southwest trending groundwater divide. If this is true, then it would then be possible for some groundwater to be flowing to the southeast. The state has reviewed Huntingdon's report and their comments (dated April 3, 1995) are included for your review.

I am concerned about your water supply system. Your well is shallow (30 ft.) and is located in close proximity to the landfill. It has been documented that the groundwater at the landfill is contaminated. Present data suggest that some groundwater is moving towards the southeast. The use of your well (pumping) may draw contaminated water towards it.

Your present water supply system would not be considered a safe source of water unless future data proves otherwise. We will sample your well during our May/June sampling run and I will notify you when the sampling date is finalized. Remember that a good sample in May/June does not mean that your water supply would be considered safe to drink.

If you have any questions please don't hesitate to call.

Sincerely,

Kelly Logan

Kelly Logan, R.S.
District Sanitarian

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APR 17 1995
Montana Department of Health
and Environmental Sciences
Waste Management Division

DISTRICT SANITARIAN
RICHLAND AND MCCONE COUNTY HEALTH DEPARTMENTS

Kelly Logan
203 5th St. S.W.
Sidney, MT 59270

Phone: 482-2207

April 14, 1995

Milo Lampbier
35 Rockmill Drive
Billings, MT 59101
Phone: 252-9349

Dear Milo,

Enclosed is Huntingdon's summary of our last sampling run at our landfill in October, 1994. The summary reports that it is possible that there is a northeast-southwest trending groundwater divide. If this is true, then it would then be possible for some groundwater to be flowing to the southeast. The state has reviewed Huntingdon's report and their comments (dated April 3, 1995) are included for your review.

I am concerned about your water supply system. Your well is shallow (30 ft.) and is located in close proximity to the landfill. It has been documented that the groundwater at the landfill is contaminated. Present data suggest that some groundwater is moving towards the southeast. The use of your well (pumping) may draw contaminated water towards it.

Your present water supply system would not be considered a safe source of water unless future data proves otherwise. We will sample your well during our May/June sampling run and I will notify you when the sampling date is finalized. Remember that a good sample in May/June does not mean that your water supply would be considered safe to drink.

If you have any questions please don't hesitate to call.

Sincerely,

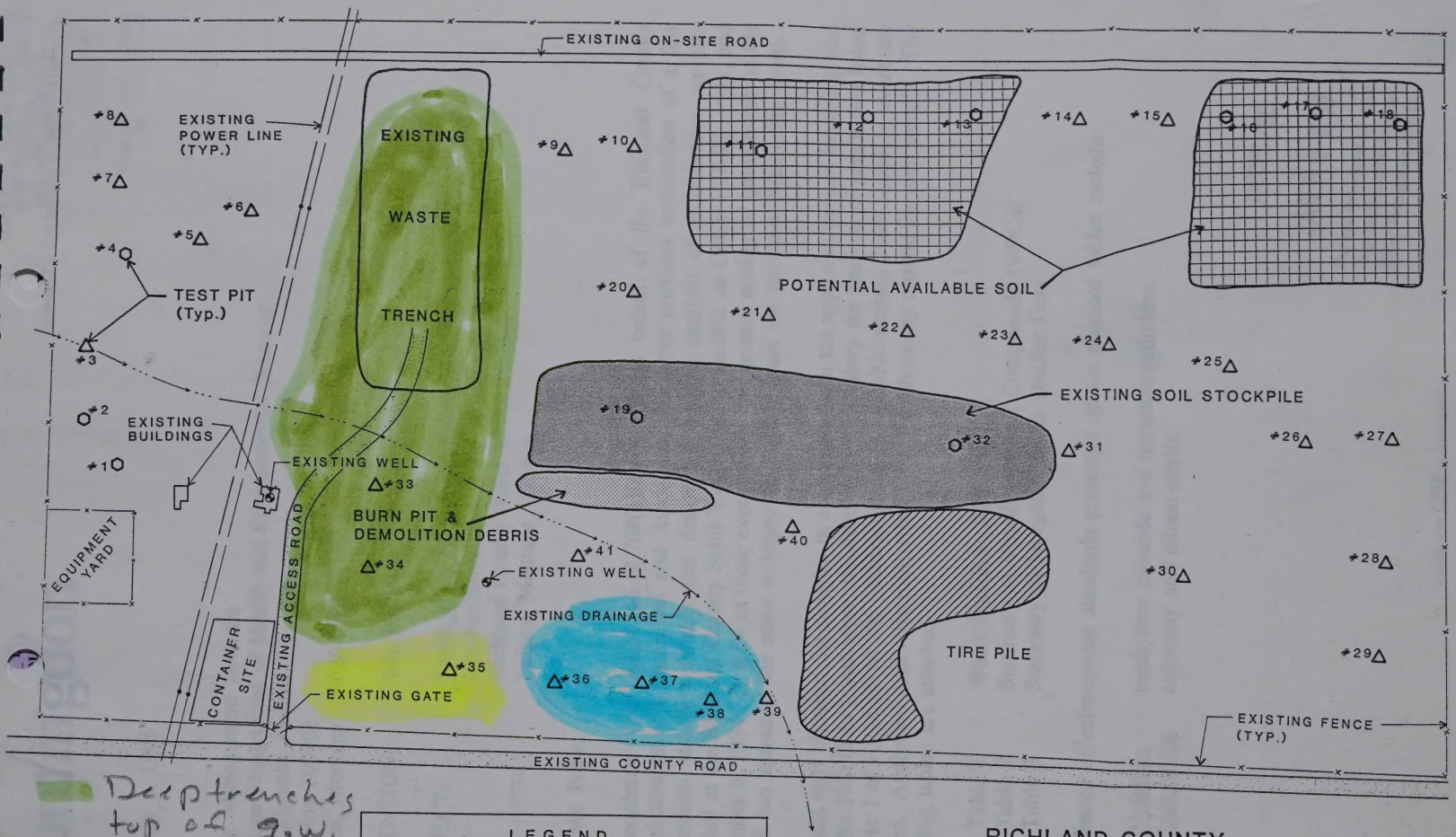
Kelly Logan, R.S.
District Sanitarian

RECEIVED

APR 17 1995

Montana Department of Health
and Environmental Science
Waste Management Section

Generalized Disposal Areas 4-13-95


EXISTING ON-SITE ROAD
EXISTING POWER LINE (TYP.)
EXISTING WASTE TRENCH
TEST PIT (Typ.)
POTENTIAL AVAILABLE SOIL
EXISTING SOIL STOCKPILE
EXISTING BUILDINGS
EXISTING WELL
BURN PIT & DEMOLITION DEBRIS
EQUIPMENT YARD
EXISTING ACCESS ROAD
EXISTING WELL
EXISTING DRAINAGE
TIRE PILE
CONTAINER SITE
EXISTING GATE
EXISTING FENCE (TYP.)
EXISTING COUNTY ROAD
#1 #2 #3 #4 #5 #6 #7 #8 #9 #10 #11 #12 #13 #14 #15 #16 #17 #18 #19 #20 #21 #22 #23 #24 #25 #26 #27 #28 #29 #30 #31 #32 #33 #34 #35 #36 #37 #38 #39 #40 #41

Deep trenches top of g.w.

class 3

Dead things 2 yrs. worth By monitoring well

LEGEND

△ #3 – PIT WITH SIGNIFICANT WASTE FOUND

○ #1 – PIT WITH VERY LITTLE WASTE FOUND

RICHLAND COUNTY
LANDFILL ANALYSIS
LOCATION MAP

DAMSCHEN AND ASSOCIATES Figure 1

10

F.I.e: Richland Co old Sidney Class II grd wtr (corr)

Huntingdon Engineering & Environmental, Inc.
600 South 25th Street
P O Box 30615
Billings, Montana 59107

Telephone: (406) 248-9161
Fax: (406) 248-9282

January 3, 1995

Waste Management Division
Montana Department of Health and Environmental Sciences
2209 Phoenix Avenue
P.O. Box 200901
Helena, Montana 59620-0901

ATTENTION: Ms. Pat Potts

SUBJECT: Notification of Enforcement Standard Exceedence;
October/November, 1994 Monitoring Event
Richland County Solid Waste District Landfill
Sidney, Montana Vicinity

Dear Ms. Potts:

In accordance with ARM 16.14.708(1)(a)(i) and on behalf of the Richland County Commissioners and Damschen and Associates, this letter provides notification of a few enforcement standard exceedences discovered through analysis of groundwater samples collected at the Richland County Solid Waste District landfill on October 18-21, 1994, and November 3, 1994. In spite of these exceedences, the general quality of groundwater at the landfill has remained the same or improved slightly since the previous monitoring event.

Our field staff obtained the samples in accordance with the approved project Sampling and Analysis Plan (SAP), and were submitted to our laboratory for analysis of parameters listed in Table 1 of ARM 16.14.706. Tables for the October/November, 1994 sampling event are attached. Analytical data were transcribed from the laboratory reports for each sample. The following tables are attached:

- Table 1 Water Elevation Data
- Table 2 Summary of Volatile Organic Compounds (VOCs)
- Table 3 Summary of Inorganic Water Quality Data

Exceedences of enforcement standards presented on the attached tables include:

Volatiles	methylene chloride and tetrachloroethylene
Inorganics	antimony and nitrate-nitrite

RECEIVED
JAN 04 1995
Montana Department of Health
and Environmental Sciences
Waste Management Division

Huntingdon

Please note, that because we have not completed the data validation process for the October/November, 1994, sample set as required by the project SAP. Therefore, the attached data should be considered preliminary. Our forthcoming data summary report will contain a description of the data validation procedure and present validated data.

Sincerely,

Huntingdon Engineering & Environmental, Inc.

Brian McHugh
Billings ECS Manager

John L. Olson
Project Hydrogeologist

BMc(JLO)dg

Enclosures

cc: w/ Att

Mr. Barry Damschen
Damschen and Associates, Inc.
P.O. Box 4817
Helena, Montana 59604

Richland County Commissioners
Richland County Courthouse
Sidney, Montana 59270

gwex1294.ltr.n.envir.903092

TABLE 1

WATER ELEVATION DATA FOR WELLS LOCATED AT THE RICHLAND COUNTY SANITARY LANDFILL, SIDNEY, MONTANA

WELL NUMBER	DATE	DEPTH TO WATER (feet)	WATER ELEVATION (feet)
SL-1	08/23/90	24.69	1934.68
	08/07/91	23.61	1936.03
	02/09/93	24.92	1934.72
	06/23/93	23.55	1936.09
	01/04/94	23.42	1936.22
	05/11/94	23.31	1936.33
	10/18/94	23.33	1936.31
SL-2	08/23/90	49.58	1932.84
	08/07/91	49.56	1932.86
	02/09/93	49.80	1932.62
	06/23/93	49.35	1933.07
	01/04/94	48.43	1933.99
	05/11/94	48.25	1934.17
	10/18/94	47.95	1934.47
SL-3	08/23/90	73.06	1933.60
	08/07/91	73.14	1933.52
	02/09/93	73.46	1933.20
	06/23/93	73.41	1933.25
	01/04/94	73.11	1933.55
	05/11/94	72.92	1933.74
	10/18/94	72.57	1934.09
SL-4	10/21/94	77.29	1934.34
SL-5	10/21/94	83.03	1935.03
8-1	08/23/90	74.06	1905.58
	08/07/91	76.15	1903.49
	02/09/93	77.11	1902.53
	06/23/93	79.75	1899.89
	01/04/94	80.70	1898.94
	05/11/94	*	*
	10/18/94	86.98	1893.20

Note: * indicates the data obtained were questionable, and are not presented.

TABLE 1

WATER ELEVATION DATA FOR WELLS LOCATED AT THE
RICHLAND COUNTY SANITARY LANDFILL, SIDNEY, MONTANA

WELL NUMBER	DATE	DEPTH TO WATER (feet)	WATER ELEVATION (feet)
	08/23/90	24.05	1934.08
	09/07/91	23.81	1936.03
	02/28/92	24.02	1934.72
	06/23/92	23.85	1934.09
MW-1	07/04/94	23.42	1936.23
	08/11/94	23.34	1936.33
	10/18/94	23.29	1936.37
	08/23/90	47.58	1932.84
	09/07/91	46.29	1932.89
	02/28/92	46.80	1932.72
	06/23/92	46.36	1932.07
MW-2	07/04/94	46.43	1932.69
	08/11/94	46.25	1934.17
	10/18/94	47.85	1934.47
	08/23/90	73.08	1923.60
	09/07/91	72.14	1923.62
	02/28/92	73.46	1923.20
	06/23/92	73.47	1923.25
MW-3	07/04/94	73.11	1923.62
	08/11/94	72.92	1923.74
	10/18/94	72.97	1934.09
MW-4	10/21/94	77.29	1924.34
MW-5	10/21/94	80.03	1928.00
	08/23/90	74.89	1907.46
	09/07/91	76.15	1903.49
	02/28/92	77.11	1902.23
	06/23/92	76.76	1902.80
B-1	07/04/94	80.79	1899.64
	08/11/94		
	10/18/94	80.68	1902.20

Note: * Indicates the data obtained were questionable, and are not presented.

TABLE 2

SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN MONITORING STATIONS
RICHLAND COUNTY SANITARY LANDFILL
SIDNEY, MONTANA

PARAMETER	MCL	MONITORING STATION / SAMPLING DATE																									
		S-5						SL-1						SL-2						SL-3						SL-4	SL-5
		8-91	2-93	6-93	1-94	5-94	10-94	8-91	2-93	6-93	1-94	5-94	10-94	8-91	2-93	6-93	1-94	5-94	10-94	8-91	2-93	6-93	1-94	5-94	10-94	10-94	11-94
BENZENE	5									11																	
CHLOROFORM	100																2	1	1	2	3	5	5	3	2	2	
1,4 - DICHLOROBENZENE	75							1		8	2																
DICHLORODIFLUOROMETHANE	*										1			4		3	1		1		8	13	4		2	1	
1,1 - DICHLOROETHANE	*																				1		4	3	2	1	
CIS - 1,2 - DICHLOROETHENE	70								9	31	2															3	
ETHYLBENZENE	700									5																	
METHYLENE CHLORIDE	5																			7	15	32	31	15	8		
TETRACHLOROETHENE	5													27	19	10	10	11	7	3	3	3	3	3	2	13	
TOLUENE	1000	1								1																	
TRICHLOROETHENE	5																					1					
1,1,1 - TRICHLOROETHANE	200														2		2	1	1	1	2		3	2	2	1	
TRICHLOROFLUOROMETHANE	*													1								3	3		2	2	
XYLENES	10000									1																	

Notes:
All Units in Micrograms per Liter
MCL - Maximum Contaminant Level Based on the US EPA
Primary Drinking Water Standards
Shading Indicates at or Above MCL
Blank Indicates Parameter Less Than Practical Quantitation Limit
* No Maximum Contaminant Level

TABLE 3

SUMMARY OF INORGANIC WATER QUALITY DATA
RICHLAND COUNTY SANITARY LANDFILL
SIDNEY, MONTANA

PARAMETERS	MCL	MONITORING STATIONS/SAMPLING DATES																						
		S-5					SL-1					SL-2					SL-3					SL-4	SL-5
	USEPA	2-93	6-93	1-94	5-94	10-94	2-93	6-93	1-94	5-94	10-94	2-93	6-93	1-94	5-94	10-94	2-93	6-93	1-94	5-94	10-94	10-94	10-94
AMMONIA as N	*					--	.89	1.45			--					--					--	--	
ANTIMONY	0.006				0.010	0.005				0.003	0.008				0.008	0.003				0.008	0.005	0.005	
ARSENIC	0.05																						
BARIUM	2.0	0.300	0.350	0.300	0.3	0.29	3.300	5.900	1.600	0.3	0.76	0.900	0.920	0.800	0.8	0.74	2.400	2.450	2.300	2.2	1.94	0.28	0.2
BERYLLIUM	0.004														0.012					0.015			
CADMIUM	0.005									0.0012													
CHROMIUM	0.1																						
COBALT	*							0.008															
COPPER	*				0.002	0.007			0.001	0.005	0.011				0.003					0.002	0.009	0.003	0.009
IRON as Fe	*						0.560			0.11													0.04
LEAD	0.05		0.003																				
MANGANESE	*						3.250	9.190									0.090	0.080			--		
NICKEL	0.1						0.020	0.050	0.020														
NITRATE-NITRITE as N	10	.73	.20	1.47	0.82	0.47	1.24	.60	10.6	4.7	47	9.00	6.60	7.7	5.8	4.6	9.20	8.40	8.0	6.8	6.4	12	0.92
SELENIUM	0.05																0.005						
ZINC	*		0.050					0.050			0.02												

NOTES:
All Units in Milligrams per Liter
MCL = USEPA Maximum Contaminant Levels for Drinking Water
Shading Indicates At or Above MCL
Blank Indicates Parameter Less Than Practical Quantitation Limit
* No Maximum Contaminant Level

Initials 3 Date 10/18/96

SOLID WASTE PROGRAM ROUTE SLIP

☐ **NEW APPLICATION** — Initial / Date
- Jim W. _____
- Jon D. _____
- Proof _____
- Cathy _____
- Roger _____

☐ **NEW LICENSE** — Initial / Date
- Jim W. _____
- Jon D. _____
- Proof _____
- Carol _____
- Cathy _____
- Roger _____

☐ **HEALTH OFFICER CARD** — Initial / Date
- Jim W. _____
- Carol _____
- Cathy _____
- _____ _____

☐ **INSPECTIONS** — Initial / Date
- Pat C. _____
- Jon D. _____
- Proof _____
- Carol _____
- Roger _____

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- Cathy _____
- Roger _____

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- Cathy _____
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☐ **CHANGE IN LICENSE FOR FEE STATUS** — Initial / Date
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- Jon D. _____
- Proof _____
- Cathy _____
- Roger _____

☐ **COMPLAINTS** — Initial / Date
- Pat C. _____
- Jon D. _____
- Proof _____
- Roger _____
- Carol (filing & DBase) _____

☐ **GENERAL CORRESPONDENCE** — Initial / Date
- Pat C./Jim W. _____
- Jon D. _____
- Proof _____
- Roger _____

☑ **MISCELLANEOUS** Grd Wtr — Initial / Date
- Proof — Tom 10-17-96
- JON D. — JD 10-17-96
- Pat C — PC 10-18 96
- Mail — 10-21-96

sw/richsid.596 Richland Co # 102

DEPARTMENT OF
ENVIRONMENTAL QUALITY
PERMITTING & COMPLIANCE DIVISION
SOLID WASTE MANAGEMENT PROGRAM
406/444-1430
FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA
MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

October 17, 1996

Richland County Commissioners
201 West Main
Sidney, Montana 59270-4087

RE: SIDNEY CLASS II LANDFILL (CLOSED), RICHLAND COUNTY - LICENSE NO. 102
RECEIPT OF THE SPRING/JULY 1996 GROUND WATER AND SURFACE WATER MONITORING RESULTS

Dear Commissioners:

Results from the Spring 1996 semi-annual assessment ground water monitoring event conducted on July 13 and 14, 1996 at the old (closed) Sidney Class II Landfill were received by the Program on September 19, 1996. The cover memo from Mr. Kelley Logan, R.S. adequately summarizes the results of this monitoring event.

STATISTICS
As Mr. Logan and I discussed in a telephone conversation prior to the submittal of the Spring 1996 sampling results, since the old (closed) Sidney Class II Landfill is presently in Corrective Measures Assessment, statistical analysis of the data is not essential prior to implementation of the selected corrective action(s). As remedial activities are implemented for ground water clean-up even if "no action" is the selected corrective measure, statistical analyses of the analytical data will be necessary to accurately determine the effectiveness of the remedy over time.

WELLS 8-1 AND 8-0
In a telephone conversation on October 11, 1996 with Mr. Logan, he requested approval to plug well 8-1. According to Mr. Jeff Kuhn with the UST Program, contaminants detected in this well appear to be similar to those commonly associated with diesel fuel. With Mr. Kuhn's previous knowledge of the situation, he suspects vandalism as the source of the diesel contamination found in the ground water in well 8-1. Therefore, the Solid Waste Program and the UST program agree with Mr. Logan that well 8-1 should be plugged and abandoned following the appropriate monitoring well plugging and abandonment procedures (see ARM 17.50.722).

Well 8-0 is another old well located on the closed landfill facility. No impacts to the natural local ground water quality have been detected in well 8-0. Due to the well's age and questionable integrity, Mr. Logan suggested that well 8-0 also be plugged. The Program realizes this well serves no active monitoring purpose and may actually become a conduit for contaminants to travel into the aquifer. Therefore, the Program will approve the proper plugging and abandonment of well 8-0.

CORRECTIVE MEASURES ASSESSMENT

On September 9, 1996 the Program received a copy of the "Corrective Measures Assessment" for the old (closed) Sidney Class II Landfill. I have briefly skimmed the document. Full review of the information and proposal for remediation will require some additional time. I anticipate our response to the "Corrective Measures Assessment" to be forthcoming within the next month.

Sincerely,

Pat Potts
Environmental Specialist

cc: Kelly Logan, R.S., Richland County Sanitarian, 221 Fifth Street SW, Sidney, MT 59270
Richland County Solid Waste District, 2149 W. Holly, Sidney, MT 59270

path: sw\richsid.s96
file: Richland Co./old (closed) Sidney Class II .Landfill/grd wtr (corresp)

Initials 3 Date 6/12/96

SOLID WASTE PROGRAM ROUTE SLIP

☐ **NEW APPLICATION** — Initial / Date
Jim W. _____
Jon D. _____
Proof _____
Cathy _____
Roger _____

☐ **NEW LICENSE** — Initial / Date
Jim W. _____
Jon D. _____
Proof _____
Carol _____
Cathy _____
Roger _____

☐ **HEALTH OFFICER CARD** — Initial / Date
Jim W. _____
Carol _____
Cathy _____
_____ _____

☐ **INSPECTIONS** — Initial / Date
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Jon D. _____
Proof _____
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Roger _____

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Jon D. _____
Proof _____
Roger _____
Carol (filing & DBase) _____

☐ **GENERAL CORRESPONDENCE** — Initial / Date
Pat C./Jim W. _____
Jon D. _____
Proof _____
Roger _____

☑ **MISCELLANEOUS** Card Wtr — Initial / Date
Proof — Tom 6-12-96
Pat C — RDL 6/13
Roger T — PCS 6-13
_____ Mail 6-14-Tom

Richland
"66" Sidney #102

sw\rich.mtl

DEPARTMENT OF
ENVIRONMENTAL QUALITY
WASTE MANAGEMENT DIVISION
SOLID WASTE MANAGEMENT PROGRAM
406/444-1430

FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

June 13, 1996

Richland County Commissioners
201 West Main Street
Sidney, Montana 59270-4087

RE: SIDNEY CLASS II LANDFILL (CLOSED), RICHLAND COUNTY REFUSE DISTRICT - LICENSE NO. 102
GROUND WATER - RECEIPT OF DECEMBER 19, 20, AND 21, 1995 MONITORING RESULTS

Dear Commissioners:

On June 19, 1996 the Program received the "December, 1995 Ground Water Monitoring Report" for the Richland County Sanitary Landfill (lic. no.102). The submittal of this document was over two months late according to ARM 17.50.708(15), which states that an owner/operator shall submit sampling results and water elevation data within 90 days after sampling. Analytical results appear to be comparable to those from previous recent sampling events.

General comments requiring further clarification in this report are:

* The monitoring well numbers in Figure 2 of the report are in error. There are two monitoring wells on this map labeled SL-3.

* Please provide the location and any available completion information for the "Lauridsen" well. The Program is not familiar with this well. We had asked for this information in our correspondence to you dated April 4, 1996, but have not received the data, as yet.

With regard to section 7.0 "Recommendations" of the report, the Program suggests the following:

1) Approval to plug well 8-0 would need to be received jointly from the Underground Storage Tank Program and the Solid Waste Program.

2) Both downgradient, wells SL-3 and SL-4 have been impacted with volatile organic compounds (VOCs), methylene chloride and tetrachloroethene, respectively. Spring S-3 is the nearest downgradient monitoring location from the landfill which has not detected any impacts to the natural quality of the water from the landfill to date. Richland County may wish to continue to sample this location to document the one downgradient point which is

beyond the present extent of the existing volatile VOC plumes found at the landfill for future reference.

3) As in the past, the Program will approve the temporary deletion of the required annual Table 2 Assessment Monitoring analysis, except for dichlorodifluoromethane which was detected in the initial Table 2 analysis, for the scheduled Spring/June 1996 sampling event. However, this temporary approval does not release Richland County from future Table 2 analyses.

4) Your most recent request for the deletion of the following inorganic parameters:

cyanide	arsenic
silver	cobalt
mercury	selenium
thallium	cadmium
chromium	

cannot be evaluated for removal from the required Table 1 list of constituents at this time.

As stated in our letter dated December 18, 1995, according to ARM 17.50.710(1)(d), when a facility is in Assessment Monitoring, the approved sampling frequency for all Table 1 parameters plus those Table 2 constituents previously detected may be no less than annual. Richland County has already deleted the above inorganic parameters from the past Fall/December 1995 event, so they cannot be deleted from the Spring/June 1996 event too.

Therefore, for the scheduled Spring/June 1996 semi-annual sampling event, the County will be required to sample for the full Table 1 list of constituents, plus dichlorodifluoromethane.

Please note, future consideration of requests for alterations/deletions in the required Table 1 list of constituents plus those Table 2 constituents previously detected, will be based on the information the Program will be provided in the ground water Corrective Measures Study (CMS) which was due to be submitted to the Program on May 1, 1995.

Sincerely,

Pat Potts
Environmental Specialist

cc: Pat Dunlavy, Maxim, P.O. Box 4699, Helena, MT 59604
Damschen and Associates, Inc., P.O. Box 4817, Helena, MT 59604
Kelly Logan, R.S., Richland County Sanitarian, 221 Fifth Street SW, Sidney, MT 59270
Harold Mercer, Mayor, City of Sidney, and Co. Commissioner, 115 2nd Street SE, Sidney, MT 59270
Richland County Solid Waste District, 2140 W. Holly, Sidney, MT 59270

path: sw\rich.d95
file: Richland Co./ old Sidney landfill (closed)/grd wtr (corr)

Initials _____ Date 4/3/96

SOLID WASTE PROGRAM ROUTE SLIP

	Initial / Date
☐ **NEW APPLICATION**	
Jim W.	
Jon D.	
Proof	
Cathy	
Roger	
☐ **NEW LICENSE**	**Initial / Date**
Jim W.	
Jon D.	
Proof	
Carol	
Cathy	
Roger	
☐ **HEALTH OFFICER CARD**	**Initial / Date**
Jim W.	
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Cathy	
_____	
☐ **INSPECTIONS**	**Initial / Date**
Pat C.	
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Proof	
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Jon D.	
Proof	
Roger	
Carol (filing & DBase)	
☐ **GENERAL CORRESPONDENCE**	**Initial / Date**
Pat C./Jim W.	
Jon D.	
Proof	
Roger	
☑ **MISCELLANEOUS** Grd Wtr	**Initial / Date**
Proof	Tom 4-3-96
Pat C.	PC 4/8/96
Jon D.	JD 4/3
Roger T.	RCS 4/5
Mail	4-5 - Tom

sw\richsid.d95

Richland Co #102

DEPARTMENT OF
ENVIRONMENTAL QUALITY

Waste Management Division
Solid Waste Program
406/444-1430

FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

April 4, 1996

Richland County Commissioners
201 West Main Street
Sidney, Montana 59270-4087

RE: **SIDNEY CLASS II LANDFILL, RICHLAND COUNTY REFUSE DISTRICT LICENSE NO. 102**
FALL/DECEMBER 1995 GROUND AND SURFACE WATER MONITORING DATA

Dear Commissioners:

On March 1, 1996, the Program received a letter with a table attached summarizing the constituents that were detected in the Fall/December 1995 ground water monitoring event at this site that equaled or exceeded a ground water protection standard (GWPS). To date, the Program has not received the complete monitoring report for this event. Please note, according to ARM 17.50.708(15), a solid waste facility required to monitor the quality of the ground water has 90 days from the date of the sampling event to submit the monitoring/sampling results to the Program for review.

Please clarify what the "Lauridsen" well represents in your March 1996 letter and the accompanying table. Does this refer to the original Lamphier well that has been sampled in the past, or is this an entirely different well? If so, please be sure to include all available well completion data.

With regard to some of the issues raised in a meeting we had on December 1, 1995 with Warren Johnson, Kelly Logan, R.S., Russ Huotari, and the County's technical representative, Barry Damschen, I submitted a memo on December 15, 1995 to John Arrigo of the Water Quality Division requesting some additional guidance on a few of the key issues. According to Water Quality, the shallow ground water presently being monitored at the old Sidney Class II Landfill is considered to be a low yield aquifer capable in some areas, such as this, as serving as an aquifer.

Concerning the need for Corrective Measures at this site, ground water beneath the landfill is state water subject to protection under the Water Quality Act (WQA). The WQA states that it is the public policy of the state to protect, maintain and improve the quality of state waters. Therefore, remediation of the ground water is warranted at the old Sidney Landfill (see attachment).

Please note, in November 1995 the Program notified Richland County that a Corrective Measures Assessment/Study for the old Sidney Class II Landfill was required according to ARM 17.50.710(4)(a)(iv)].

Sincerely,

Pat Potts
Environmental Specialist

attachment: Memo from John Arrigo, WQD

cc: Brian McHugh and John Olson, Huntingdon, P.O. Box 30615, Billings, MT 59107

Barry Damschen, Damschen and Associates, Inc., P.O. Box 4817, Helena, MT 59604

Kelly Logan, R.S., Richland County Sanitarian, 221 Fifth Street SW, Sidney, MT 59270

Harold Mercer, Mayor, City of Sidney, 115 2nd Street SE, Sidney, MT 59270

path: sw\richsid.d95
file: Richland County/Sidney Class II/grd wtr (corr)

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY DIVISION

MARC RACICOT, GOVERNOR

COGSWELL BUILDING
1400 BROADWAY

STATE OF MONTANA

(406) 444-2406
FAX (406) 444-1374

PO BOX 200901
HELENA MONTANA 59620-0901

MEMORANDUM

RECEIVED

APR 01 1996

Montana Department of Environmental Quality
Waste Management Division

TO: Pat Potts, WMD
FROM: John Arrigo, WQD
DATE: March 29, 1996
SUBJECT: Old Sidney Landfill

I am sorry it has taken so long to respond to your memo. You asked two basic questions, (1) Is the water-bearing formation considered a aquifer according to water quality criteria, and (2) Are corrective measures warranted at the site.

The Water Quality Act (WQA) and the Public Water Supply Law and their corresponding regulations do not contain a definition for aquifer or contain regulatory criteria that can be used to determine if a formation is an aquifer. Under the Montana Agricultural Chemical Ground Water Protection Act "aquifer" means a water-bearing, subsurface formation capable of yielding sufficient quantities of water to a well for a beneficial use [80-15-102(2), MCA].

The 5 to 6-foot diameter, hand dug well yields water for a domestic supply so it appears that the formation penetrated by that well would be considered an aquifer. Obviously well construction is an important factor in determining well yield. No information is provided on the yield of this well over a period of time. Realistically, a large diameter well in a low yield formation may be more of a collection sump than a supply well. Monitoring wells near the landfill produce adequate water for monitoring purposes. However under the Montana water use regulations, water testing or monitoring is not a beneficial use of water requiring the filing of a permit (water right) application [ARM 36.12.106].

Compared to Montana's productive alluvial aquifers, the low yield formations beneath the landfill would be considered aquitards. In some parts of Montana these low yield formations provide the only source of drinking water for rural residents. In these cases these low yield formations clearly serve as aquifers. At the old Sidney landfill if you have monitoring wells that produce up to 0.28 gpm and a spring discharging from the same formation at 15 gpm, I would conclude the formation is a low yield aquifer.

For the purpose of determining if corrective action is warranted, the aquifer question is moot. Public policy under the WQA is to protect, maintain and improve the quality of state water. The WQA definition of "state water" means a body of water, irrigation system, or drainage system, either surface or underground [75-5-103(25), MCA]. "Ground water" under the Montana Ground Water Pollution Control System Regulations means water occupying the voids within a geologic stratum and within the zone of saturation [ARM 16.20.1001(5)]. The ground water beneath the landfill is state water subject to protection under the WQA.

Operation of the landfill must comply the WQA and corresponding regulations. If the human health standards listed in WQB-7 are exceeded in the ground water for any parameter a violation of the WQA has occurred, and corrective action is warranted. The department may authorize water quality standards to be exceeded in either a mixing zone or in an authorization to degrade. The old Sidney landfill has neither a permitted mixing zone or an authorization to degrade. If you need assistance to determine WQA compliance issues, please feel free to contact me.

Initials [redacted] Date 12/14/95

SOLID WASTE PROGRAM ROUTE SLIP

☐ **NEW APPLICATION** — Initial / Date
Jim W. _____
Jon D. _____
Proof _____
Cathy _____
Roger _____

☐ **NEW LICENSE** — Initial / Date
Jim W. _____
Jon D. _____
Proof _____
Carol _____
Cathy _____
Roger _____

☐ **HEALTH OFFICER CARD** — Initial / Date
Jim W. _____
Carol _____
Cathy _____
_____ _____

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Roger _____

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Jon D. _____
Proof _____
Cathy _____
Roger _____

☐ **COMPLAINTS** — Initial / Date
Pat C. _____
Jon D. _____
Proof _____
Roger _____
Carol (filing & DBase) _____

☐ **GENERAL CORRESPONDENCE** — Initial / Date
Pat C./Jim W. _____
Jon D. _____
Proof _____
Roger _____

☑ **MISCELLANEOUS** Grd Wtr — Initial / Date
Proof — Tom 12-14
Pat C. — PPC 12/18
Jon D — JD 12-15
Roger T — DCC 12-18
Mail — 12-18 - Tom

swlrichsid.mtl

DEPARTMENT OF ENVIRONMENTAL QUALITY
Waste Management Division
Solid Waste Program
406/444-1430
FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA
MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

December 18, 1995

Post-it® Fax Note 7671	Date	# of pages ▶ 2
To Kelly Logan	From Pat Cravath	
Co./Dept.	Co. Solid Waste	
Phone #	Phone #	
Fax # 482-3731	Fax #	

Richland County Commissioners
201 West Main Street
Sidney, Montana 59270-4087

RE: **SIDNEY CLASS II LANDFILL, RICHLAND COUNTY REFUSE DISTRICT LICENSE NO. 102**

Dear Commissioners:

In response to a letter dated December 8, 1995, from Mr. Patrick Dunlavy with Maxim Technologies, Inc. on behalf of Richland County, the Program has reviewed the request to delete 15 of the 24 inorganic parameters listed on Table 1 (ARM 16.14.706). According to Mr. Dunlavy's letter, this decreased list of parameters would only apply to the scheduled Fall 1995 monitoring event.

The Program is concerned that Richland County may compromise the consistency of their recently established minimum analytical data base and the ability to perform the necessary statistical analyses of the water quality analytical data according to ARM 16.14.706(12), (13)(e), and (14). Detected levels and or traces of some of the constituents found in previous sampling events could indicate the presence of that particular constituent in the waste stream/leachate.

However, the Program will agree to allow Richland County to decrease the number of inorganic sampling parameters for the up-coming Fall 1995 event, but not the entire list as presented in Mr. Dunlavy's letter dated December 8, 1995. In accordance with ARM 16.14.706(8)(b), the following inorganic parameters may be deleted from the Fall 1995 sampling event:

- cyanide
- silver
- mercury
- thallium
- chromium
- arsenic
- cobalt
- selenium
- cadmium

The second proposal made in the letter was to decrease the required semi-annual sampling frequency. Since the facility is presently in continued Assessment Monitoring (sampling phase required in Corrective Measures) according to ARM 16.14.708(1)(a)(v), the Department only has regulatory flexibility to reduce sampling frequency to annually [refer to ARM 16.14.708(1)(d)].

The Program has already reduced the number of constituents from the required annual full Table 2 analysis of all the wells as required in ARM 16.14.708(1)(a)(v)(A), to Table 1 plus dichlorodifluoromethane (detected from initial Table 2 Assessment Monitoring). Therefore, the Program is bound by the regulations to require at least a full Table 1 plus dichlorodifluoromethane sampling event be conducted at the old Sidney Class II landfill at least annually.

Sincerely,

Pat Potts

Pat Potts
Environmental Specialist

cc: Pat Dunlavy, Maxim, P.O. Box 4699, Helena, MT 59604

Damschen and Associates, Inc., P.O. Box 4817, Helena, MT 59604

Kelly Logan, R.S., Richland County Sanitarian, 221 Fifth Street SW, Sidney, MT 59270

Harold Mercer, Mayor, City of Sidney, 115 2nd Street SE, Sidney, MT 59270

Richland County Solid Waste Solid Waste District, 2140 W. Holly, Sidney, MT 59270

path: sw\richsid.mtl
file: Richland County/Sidney Class II/grd wtr (corr)

Initials 3 Date 12/15/95

SOLID WASTE PROGRAM ROUTE SLIP

	Initial / Date
☐ **NEW APPLICATION**	
Jim W.	
Jon D.	
Proof	
Cathy	
Roger	
☐ **NEW LICENSE**	**Initial / Date**
Jim W.	
Jon D.	
Proof	
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Cathy	
Roger	
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Pat C.	
Jon D.	
Proof	
Roger	
Carol (filing & DBase)	
☐ **GENERAL CORRESPONDENCE**	**Initial / Date**
Pat C./Jim W.	
Jon D.	
Proof	
Roger	
☑ **MISCELLANEOUS** Cond Wtr	**Initial / Date**
Proof	Tom 12-15
Pat C	Pat 12/18
Jon D	JD 12/19
Roger T	RCS 12/18

sw\richsid.rch

DEPARTMENT OF ENVIRONMENTAL QUALITY

FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

Waste Management Division
Solid Waste Program
(406) 444-1430

MEMORANDUM

TO: John Arrigo - Water Quality Division

FROM: Pat Potts

DATE: December 15, 1995

SUBJECT: OLD SIDNEY CLASS II LANDFILL - STATUS OF UPPER GROUND WATER SYSTEM (AQUIFER COMPARED TO GROUND WATER)

On Friday, December 1, 1995, the solid waste program met with Richland County officials (Warren Johnson, Kelly Logan,R.S., and Russ Huotari) and their technical representatives (Barry Damschen and Pat Dunlavy) to discuss the Corrective Measures Assessment Phase for ground water monitoring and remediation at the old Sidney Class II Landfill (license no. 102). Many issues were raised but the primary point concerning ground water regulatory enforcement hinges on whether the monitoring at this site is in the uppermost AQUIFER.

The solid waste program feels strongly that this is an aquifer according to quantity (recharge rate) and quality (Class I and II). The following data provided in the November 1990 Phase II: Hydrogeologic Characterization... and the ground water monitoring data since August 1992 (when VOCs were included in the sampling requirements) should substantiate the program's determination.

QUALITY

* Specific conductivity ranges from 321 to 2380 µmhos/cm, upgradient to downgradient, respectively. According to ARM 16.20.1002, this ground water would qualify as Class I and Class II.

* Basic ions are not above normal water quality levels. Chloride concentrations do increase from upgradient (4 µg/L) to downgradient (246 µg/L), as might be expected in a contaminated ground water situation.

QUANTITY

* August 1990 slug tests (generally used for low permeable materials, as stated in the November 1990 hydrogeologic characterization) were conducted on monitoring wells SL-2 and SL-3 which are completed in the SANDY GRAVEL relatively shallow aquifer (water level ranges from 23 feet below TOC in SL-1 upgradient, to 83 feet below TOC in SL-5 downgradient). Results of these slug tests were summarized in the text of the report as: equilibrating to the original water levels in less than 4 seconds after inserting the slug. No slug test data was included in Appendix A, as referenced in the report.

* From the Spring 1995 field notes, monitoring wells (.020 slot, 2" dia., variable screen lengths from 5 feet to 15 feet long) were purged at rates from 0.16 gpm to 0.28 gpm. However, this does not mean that this is a representative recharge rate for these wells. No indications were given that the wells were pumped dry, and no recharge rates were provided which would show the rate at which the wells equilibrate back to the original water levels after purging.

* S-5, the undeveloped spring approximately 300 feet to the south of the landfill's south property boundary (upgradient in the shallow aquifer) was estimated to flow at 2 gpm. The downgradient spring (S-3) approximately 1 mile to the north, was estimated to flow at 15 gpm ("Summer, 1995 Ground Water Monitoring Report", by Maxim dated October 1995, page 7).

* A 32.5 feet deep, 5 to 6-foot diameter, hand-dug well (Lamphier is the owner of the property and the well), intended for domestic supply is located adjacent to the southeast corner of the landfill property boundary. This well has been sampled by the County (Maxim) twice. Field notes available from the most recent sampling event (Spring 1995) showed that a total of 3480 gallons of water was purged from this well before it was sampled. The purge rate was 40 gpm. No VOCs have been detected in this well to date however, ground water flow is following a mounding pattern on three of four sides.

* Several permeability tests were run in 1990, on the sandy gravel material in which the waste is buried. At 20 feet deep the triaxial permeability was determined to be 5.67 ft/da (2×10^{-3} cm/sec). Calculated hydraulic conductivity from grain-size sieve analysis data was 11.34 ft/da (4×10^{-3} cm/sec) in a silty sand at 20 feet BGS in SL-2 and SL-3. Double ring infiltrometer tests conducted in the landfill base material exposed in the active trench at the time of the test were calculated to range from 39.69 ft/da (1.4×10^{-2} cm/sec) to 11.91 ft/da (4.2×10^{-3} cm/sec).

  Beneath the shallow aquifer is the Fort Union clay. Permeability in a sample collected from 55 feet deep was

determined (triaxial) to be 0.023 ft/da (8×10^{-6} cm/sec).

* Additional nearby water well information showed the following:

  Well 8-2 east side of landfill site, 16 feet deep.

  Supply well 65 feet deep in the same section as the landfill (sec. 8), makes 5 gpm, according to well log.

The solid waste program would appreciate water quality's opinion concerning the appropriate definition/category for this shallow ground water bearing unit. Is this an aquifer according to water quality criteria? Are Corrective Measures warranted in this situation? If I can provide any more information that will be of help to you, please give me a call.

GENERAL HYDROGEOLOGIC AND WATER QUALITY CONDITIONS AT THE SITE
Richland County and their technical representatives believe that 24 µg/L of tetrachloroethene in the ground water downgradient from the landfill property is not worth cleaning up. The solid waste program is concerned that the ground water protection standards (GWPSs) be enforced at this site to protect future beneficial uses of this water, even if the public in Sidney does not care (as the County Commissioner stated). According to Warren Johnson the County Commisssioner, the land owner to the north on whose property the highest levels of contamination have been detected, does not care. This same property owner, owns the downgradient spring (S-3), as well. No contamination (i.e., VOCs) has been found in S-3 at this time. However, allowed to migrate uncontrollably in the shallow aquifer, effects may be eventually observed in the spring (estimated 2.5 years).

enclosure - Location Map
Site Map

Path: sw\richsid.rch

Initials 3 Date 11/22/95

SOLID WASTE PROGRAM ROUTE SLIP

☐ NEW APPLICATION	Initial / Date
Jim W.	
Jon D.	
Proof	
Cathy	
Roger	

☐ NEW LICENSE	Initial / Date
Jim W.	
Jon D.	
Proof	
Carol	
Cathy	
Roger	

☐ HEALTH OFFICER CARD	Initial / Date
Jim W.	
Carol	
Cathy	
_____	

☐ INSPECTIONS	Initial / Date
Pat C.	
Jon D.	
Proof	
Carol	
Roger	

☐ INTERIM CLOSURES	Initial / Date
Jim W.	
Jon D.	
Proof	
Carol	
Cathy	
Roger	

Route quickly, if possible. Meeting on Dec 1 !

☐ CLOSURES	Initial / Date
Jim W.	
Jon D.	
Proof	
Carol	
Cathy	
Roger	

☐ CHANGE IN LICENSE FOR FEE STATUS	Initial / Date
Jim W.	
Jon D.	
Proof	
Cathy	
Roger	

☐ COMPLAINTS	Initial / Date
Pat C.	
Jon D.	
Proof	
Roger	
Carol (filing & DBase)	

☐ GENERAL CORRESPONDENCE	Initial / Date
Pat C./Jim W.	
Jon D.	
Proof	
Roger	

☑ MISCELLANEOUS Grd Wtr	Initial / Date
Proof	Tom 11-22
Jon D	JD 11-22
Roger T	RCT 11-22
_____	_____
Mailed	11-22 Tom

SW/richsid.S95

DEPARTMENT OF
ENVIRONMENTAL QUALITY

Waste Management Division
Solid Waste Program
406/444-1430

FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

November 22, 1995

Richland County Commissioners
201 West Main Street
Sidney, Montana 59270-4087

RE: **SIDNEY CLASS II LANDFILL, RICHLAND COUNTY REFUSE DISTRICT LICENSE NO. 102**
REVIEW OF THE JUNE-AUGUST/SPRING 1995 GROUND AND SURFACE WATER MONITORING DATA

Dear Commissioners:

After reviewing the June-August/Spring 1995 ground and surface water monitoring data submittal which was received by the Department on November 7, 1995, the Department has the following comments concerning the water quality data that has been collected at this site.

1) Statistically significant increases above the ground water protection standard (GWPS) were reported for methylene chloride in monitoring well SL-3, and for tetrachloroethene in monitoring well SL-2. The statistical data evaluation in this latest monitoring report did not mention that concentrations of tetrachloroethene in SL-4 have been in excess of the GWPS/maximum contaminant level (MCL) for the past two sampling events. The tetrachloroethene concentration in monitoring well SL-4 in October 1994 was 13 µg/L. In August 1995, the concentration of tetrachloroethene had increased to 26 µg/L in SL-4.

The Department realizes that data from only two sampling events is inadequate to perform any statistical analysis. However, it is the responsibility of the owner/operator to have collected and analyzed a sufficient number of independent samples from each monitoring well and sampling point in order to be able to perform an acceptable statistical analysis. The four independent sample rule applies in the initial stage of Assessment Monitoring [see ARM 16.14.708(1)(a)(iv) recodified as ARM 17.50.710(1)(a)(iv), and is also applicable through the

continued Assessment Monitoring phase [see ARM 16.14.708(1)(a)(v)(D) recodified as ARM 17.50.710(1)(a)(v)(D)], for new well installations.

From the analytical data collected at SL-4, it is reasonably clear that this well is the most severely impacted well at the facility, to date. Tetrachloroethene values; although limited, indicate the need for SL-4 to be included in the Corrective Measures Assessment (CMA). The concentration of tetrachloroethene is over six times the GWPS/MCL. Otherwise, it will be necessary to collect sufficient samples to document that tetrachloroethene concentrations are not statistically significant in SL-4.

2) A variety of volatile organic compounds were detected in the ground and surface water samples collected at the old Sidney Class II Landfill in the August 1995 sampling event. The data validation summary in this monitoring report only addressed the relative percent differences (RPD) calculated between the analytical results of the natural or initial sample and the field duplicate.

An explanation was not provided in the data validation section of the report that would explain the presence of some or all of the low level VOCs detected in the August 1995 analytical data. Was a trip blank, cross contamination blank, and/or an equipment blank collected and analyzed for the purpose of quality control? If analytical results are available from a trip blank, please provide them to the Department for our records.

No data regarding laboratory spike recoveries or surrogate spike recoveries was provided, nor was mention made of such laboratory quality assurance tests run in conjunction with the August 1995 VOC sampling event. Was this data inadvertently omitted from the monitoring report? If so, please provide this information, as validity of the August 1995 VOC laboratory analytical results is questionable at this point in time.

RECOMMENDATIONS FOR FUTURE SAMPLING

1) Seriously consider collecting at least two additional independent samples from SL-4 over the next several months (no more frequent than monthly sampling), and at least prior to the Spring 1996 scheduled semi-annual sampling event.

2) Please include a trip blank and any other applicable cross contamination and/or bottle-equipment blanks whenever conducting an official sampling event at this facility.

CONCLUSION
It would appear that we are all in agreement with the statistical analysis provided in the October 1995 monitoring report. Concentrations of methylene chloride in SL-3, and tetrachloroethene in SL-2 indicate that a Corrective Measures Assessment (CMA) will be required according to ARM 16.14.708(4) recodified as ARM 17.50.710(4).

However, the summary of the monitoring report is limited in the fact that this report does not address the tetrachlorothene concentrations detected in the two sampling event conducted at SL-4. Basic laboratory analytical data from SL-4 shows that tetrachloroethene levels have been well in excess of the GWPS/MCL for the two events during which this well was sampled. The Department feels that SL-4 should be included as an integral component in the CMA.

We look forward to meeting with you and your technical representatives at 8:30 A.M. on December 1, 1995 at our office on Phoenix Street. At that time we can discuss these issues in greater detail and possibly set-out some specific avenues for plume delineation and possible remedial alternatives for consideration in the CMA.

Sincerely,

Pat Potts
Environmental Specialist

cc: Brian McHugh and John Olson, Huntingdon, P.O. Box 30615, Billings, MT 59107

Barry Damschen, Damschen and Associates, Inc., P.O. Box 4817, Helena, MT 59604

Kelly Logan, R.S., Richland County Sanitarian, 221 Fifth Street SW, Sidney, MT 59270

Harold Mercer, Mayor, City of Sidney, 115 2nd Street SE, Sidney, MT 59270

path: sw\richsid.s95
file: Richland County/Sidney Class II/grd wtr (corr)

ROUTE SLIP

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

TO: Prod RW 3/29 CU 4-3 DATE: 3/29/95

1. [redacted]
2. Jon JD
3. Roger pc

☑ Approval	☐ Comment	☐ Necessary Action
☐ Note and Return	☐ Note and File	☐ Investigate
☐ Prepare reply	☐ Signature	☐ See Me
☐ As requested	☐ For your information	☐ Per Conversation

REMARKS:

sw/richsid.f94

FROM: [redacted]

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES

Waste Management Division
Solid Waste Program
406/444-1430
FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

April 3, 1995

Richland County Commissioners
201 West Main Street
Sidney, Montana 59270-4087

RE: **SIDNEY CLASS II LANDFILL, RICHLAND COUNTY REFUSE DISTRICT**
LICENSE NO. 102
GROUND WATER -
REVIEW OF THE FALL 1994 GROUND WATER ANALYTICAL DATA, AND THE CORRECTIVE MEASURES STUDY REQUIREMENT

Dear Commissioners:

As specific applications of the ground water monitoring rules from the most current Administrative Rules of Montana (ARM) Title 16, Chapter 14, Subchapter 7 (original 40 CFR Part 258) evolve, it is important for the Department to be as equally consistent as possible with each solid waste facility concerning the enforcement of these relatively new regulatory requirements. The Sidney Class II Landfill conducted an initial Assessment Monitoring event in May 1994.

According to ARM 16.14.708(4)(a)(iv), upon receipt of the analytical results from the Assessment Monitoring event which detected a statistically significant increase above an enforcement standard [ARM 16.14.708(4)], the facility is required to initiate an assessment of Corrective Measures within 90 days. However, the requirement for a Corrective Measures Study was deferred until the two additional ground water monitoring wells suggested by the Department to help delineate the extent of the ground water plume(s), were installed and sampled.

The two new wells (SL-4 and SL-5) were installed in October 1994, and were sampled during the normally scheduled Fall 1994 event. The analytical results from SL-4 indicate that at least the tetrachloroethene plume has migrated over 250 feet from the original northern landfill boundary, at concentrations well over the enforcement standard/maximum contaminant level (MCL) for tetrachloroethene, which is 5 ppb. No volatile organic compounds were detected in SL-5 which was installed approximately 100 feet

north of the original northeast landfill property boundary, and most likely is the more distant well from any of the known disposal areas at the site. Existing wells SL-2 and SL-3 have detected concentrations of tetrachloroethene in the ground water at similar concentrations as found in the past sampling events; noting specifically that SL-2 is still in exceedance of the MCL for tetrachloroethene.

According to the analytical results from the November/Fall 1994 ground water sampling event, it appears that a Corrective Measures Study will be needed to evaluate possible remedial methods/ technologies for the control and/or elimination of the known contamination that is emanating from the landfill and migrating into the ground water beneath the facility. The Department also realizes the importance of another sampling event to confirm the concentrations measured in the ground water, especially at the new monitoring wells, and encourages the County to conduct the May/June-Spring 1995 ground water sampling event as scheduled.

Following the receipt of Spring 1995 laboratory analytical results by the owner/operator or the representative consulting firm, if the concentrations of the VOCs are still in exceedance of MCLs, the facility will be required to submit a Corrective Measures Study, as well as address all items in accordance with ARM 16.14.708(4)(a)(i) through (iv). Some of these requirements may have already been met and should be included in the Corrective Measures Study.

Some additional information that is needed that could be very helpful, and should be considered in the Corrective Measures Study report in determining the migration and dilution rates of the contaminant plume(s) includes, at a minimum, the following:

* Documentation of landfill closure activities which should include plans concerning the particular waste disposal areas that are covered with final cover material, and approximately when they were covered (month and year), and those particular waste disposal areas that still remain open and active.

* From the limited ground water level elevation data that are available at the site, it appears that shallow ground water has either mounded beneath the site due to excessive infiltration over a large unvegetated area, or as described in the last ground water report, a ground water divide (natural?) is present beneath the site.

In either of the above two interpretations of ground water elevation data from the site, it is reasonably apparent that ground water is flowing in several different directions from

the site. This interpretation, plus the variability in distribution of the additional chemical constituents (in addition to tetrachloroethene) that have been detected in the ground water at this site, could indicate leaching from different source areas of the overall waste disposal facility, and/or variability in the rate of transport.

It is still premature to accurately determine if the closure activities that are in place at the landfill may have already actually decreased chemical constituent concentrations in the ground water. With the ground water VOC data from SL-4 which detected levels of tetrachloroethene well above the MCL (13 ppb), one of the major, immediate concerns is the northerly areal extent of this particular part of the contaminant plume(s).

With the relatively abnormal VOC constituents detected during the initial sampling events for SL-1, concerns arise as to background/ upgradient water quality, and possible potential impacts to the spring (S-5) in the future. S-5 has served as the background/ upgradient monitoring location from the initiation of sampling at this site (August, 1991).

If Richland County is monitoring the levels of explosive gases at this site as required according to ARM 16.14.521(1)(g), are any lower explosive limit (LEL) exceedances occurring at the site, and in what locations? Are the higher VOC concentrations detected in the ground water related to LEL gas exceedances? If any, are the gas exceedances found to the south where there was earlier evidence of the presence of lighter VOCs, as compared to the heavier molecules associated with tetrachloroethene, detected elsewhere? This type of comparative analysis may help to determine rates of possibly naturally-occurring degradation, or the fate of the VOCs during migration and ground water transport.

With regard to the rate of ground water flow to the north (i.e., from SL-4), would it be possible for the spring (S-3) located approximately one mile north of the site to be impacted since it was last sampled approximately one year ago? Please estimate the time it would take a tetrachloroethene plume detected in SL-4 (at 13 ppb concentration) to travel approximately one mile hydraulically down gradient horizontally in the ground water.

Please be sure to submit copies of the MDHES well completion forms for SL-4 and SL-5, as well as for any additional ground water monitoring wells that are installed at this facility in the future [see, ARM 16.14.705(11)].

In conclusion, Richland County is required to sample all 5 monitoring wells, and at least the upgradient spring (S-5) for the regularly scheduled semi-annual May/June-Spring 1995 sampling event. A sample from the spring to the north (S-3) may need to be analyzed for VOCs. Following the receipt of these laboratory analytical results and assuming VOCs have exceeded MCLs in SL-4 and/or SL-2, the Sidney Class II Landfill will be required to begin an assessment of Corrective Measures within 90 days [ARM 16.14.708(4)]. Richland County may have an additional 60 days to finalize the required Corrective Measures Study document prior to submittal of this document to the Department for their review [ARM 16.14.708(6)(a)]. A public meeting will need to be arranged by the owner/operator in conjunction with the selection of a particular appropriate remedial measure(s) for Corrective Action at this site [ARM 16.14.708(6)(d)].

The Department greatly appreciates Richland County's diligent efforts in maintaining a high quality, consistent sampling schedule over the past two and a half to three years, and encourages the County to follow through with continued ground water sampling for all Table 1 (ARM 16.14.706) parameters/constituents, plus dichlorodifluoromethane. A Corrective Measures Study will be an important tool in determining the extent of the impacts to the ground water from the landfill operations, so that all parties may better understand the risks compared to the possible remediation of the ground water at this site.

Sincerely,

Pat Potts

Pat Potts
Environmental Specialist

cc: Brian McHugh and John Olson, Huntingdon, P.O. Box 30615, Billings, MT 59107

Barry Damschen, Damschen and Associates, Inc., P.O. Box 4817, Helena, MT 59604

Kelly Logan, R.S., Richland County Sanitarian, 221 Fifth Street SW, Sidney, MT 59270

Harold Mercer, Mayor, City of Sidney, 115 2nd Street SE, Sidney, MT 59270

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